

## CLAIMS

01 Sub 1  
5  
1  
Stereoscopic device comprising:

at least two apertures, each said apertures including a light valve, each said light valves being operative to open at a different predetermined timing;

a multi wavelength light sensor array, and

10 a controllable multi wavelength illumination unit, producing at least two alternating beams of light, each said beams of light characterized as being in a different range of wavelengths,

15 wherein said multi wavelength light sensor array detects a plurality of images, each said images corresponding to a predetermined combination of an open state of a selected one of said light valves and a selected one of said at least two alternating beams of light.

20 2. The stereoscopic device according to claim 1, wherein said multi wavelength light sensor array includes at least two groups of sensors, wherein the sensors of each said group detect light in a different range of wavelengths.

25 3. The stereoscopic device according to claim 1, wherein said multi-wavelength light sensor array includes a plurality of sensors, each said sensors detecting light in a predetermined range of wavelengths.

30 4. The stereoscopic device according to claim 1, wherein said controllable multi wavelength illumination unit surrounds said apertures.

000001-1296960

5. The stereoscopic device according to claim 1, wherein said controllable multi wavelength illumination unit directs light aside from said apertures.

6. The stereoscopic device according to claim 1, wherein said controllable multi wavelength illumination unit comprises:

a multi wavelength light source;

a light dispersing unit; and

light guiding means connected between said multi wavelength light source and said light dispersing unit, thereby guiding light from said multi wavelength light source to said light dispersing unit.

7. The stereoscopic device according to claim 6, wherein said light dispersing unit surrounds said apertures.

8. The stereoscopic device according to claim 1, wherein said light illuminating unit produces at least two alternating beams of light, each said beams of light characterized as being in a different range of wavelengths.

9. The stereoscopic device according to claim 1, further comprising a controller connected to said light valves, said multi wavelength light sensor array and to said controllable multi wavelength illumination unit, said controller timing the operation of said light valves, said multi wavelength light sensor array and said controllable multi wavelength illumination unit.

10. The stereoscopic device according to claim 1, further comprising capture means, connected to said multi wavelength light sensor array, for capturing data received from said multi wavelength light sensor array.

11. The stereoscopic device according to claim 10, further comprising a storage unit for storing said captured data.

12. The stereoscopic device according to claim 9, further comprising a stereoscopic display unit, connected to said controller, for producing said images.

13. The stereoscopic device according to claim 1, wherein each said different ranges of wavelengths associated with said multi wavelength illumination unit, is selected from the list consisting of:

- substantially visible red color light;
- substantially visible green color light;
- substantially visible blue color light;
- substantially visible cyan color light;
- substantially visible yellow color light;
- substantially visible magenta color light;
- substantially infra-red light;
- substantially ultra-violet light; and
- visible light.

14. The stereoscopic device according to claim 2, wherein each said different ranges of wavelengths, associated with said sensors, is selected from the list consisting of:

- substantially visible red color light;
- substantially visible green color light;

substantially visible blue color light;  
substantially visible cyan color light;  
substantially visible yellow color light;  
substantially visible magenta color light;  
substantially infra-red light;  
substantially ultra-violet light; and  
visible light.

15. The stereoscopic device according to claim 1, wherein said multi wavelength light sensor array is a color red-green-blue (RGB) sensor array.
16. The stereoscopic device according to claim 1, wherein said multi wavelength light sensor array is a color cyan-yellow-magenta-green (CYMG) sensor array.
17. The stereoscopic device according to claim 1, further comprising an image processing system connected to said multi wavelength light sensor array and to said controllable multi wavelength illumination unit.
18. The stereoscopic device according to claim 1, further comprising a motion detector detecting the movement of said multi wavelength light sensor array and said apertures.
19. The stereoscopic device according to claim 18, further comprising an image processing system connected to said multi wavelength light sensor array, said controllable multi wavelength illumination unit, said apertures and said motion detector.

54b  
CA

20. Method for detecting a stereoscopic image comprising the steps of:  
alternating between at least two apertures, directed at an object;  
producing a sequence of at least two illumination beams, at different  
5 ranges of wavelengths; and  
detecting a plurality of frames, each for a combination including a  
selected one of said apertures and at least a selected one of  
said beams.

10 21. The method according to claim 20, further comprising the step of  
reconstructing a stereoscopic image from said frames.

000001-42966960